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THE ATWELL'S MILL CHECK PLOT

SEQUOIA NATIONAL PARK

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In order to keep in touch with the continued insect losses and the general trend of barkbeetle populations in a given region over a long period of time, a permanent check plot is of great value. The study of the data gathered from the annual cruise of the permanent plot makes it possible to tell more accurately whether the loss of timber by insect attacks is increasing or decreasing and how great this loss is each year.

Such a plot was laid out in 1930 by Mr. J. M. Miller of the U. S. Bureau of Entomology and Mr. Frank Been, Acting Park Forester of the Sequoia National Park. The plot covered about 100 acres of the yellow pine-sugar pine type that was thought to be representative of the yellow pine-sugar pine stands of the East Fork drainage of the Kahweah River. The plot is situated roughly about 1½ miles west of Atwell's Mill and just east of Timber Point. The accompanying map shows the location of the plot.

This area was cruised in 1930, 1931, and 1933. During each of these cruises every infested yellow pine and sugar pine and any tree that had been infested the previous year was blazed, given a number, and its position mapped in on a spotting plot. The insect killing the tree, year of attack, condition of the brood, number of logs, and D.B.H. was recorded on a spotting record. The aforementioned map shows the position of the marked trees and the year of attack. This is expressed as a fraction, the numerator being the year of attack, the denominator the tree number.

Table 1 summarizes the data that were secured during each of these cruises.

Table 1, showing number of trees killed and volume by summer and winter broods of D. brevicomis and D. monticolae between 1929 and 1933 (incl.) on the Atwell Mill Check Plot, Sequoia National Park.

Tree Species	Insect	Brood	Season														
			1929			1930			1931			1932			1933		
			No.trees killed	Volume B.F.	Avg.	No.trees killed	Volume B.F.	Avg.	No.trees killed	Volume B.F.	Avg.	No.trees killed	Volume B.F.	Avg.	No.trees killed	Volume B.F.	Avg.
Yellow Pine	D.b.	Summer	13	22,910	1762	19	24,740	1302	25	22,100	884	33	17,390	526	11	14,470	1315
		Winter	44	26,070	592	19	21,960	1155	10	4,120	412	14	11,010	748	19	7,580	398
			47	48,960	1041	38	46,700	1228	35	26,220	849	47	28,400	604	30	22,050	735
	D.m.	Summer	-	-	-	-	-	-	-	-	-	1	790	-	-	-	-
		Winter	3	2,350	-	-	-	-	-	-	-	-	-	-	1	160	-
Sugar Pine	D.m.	Summer	2	6,660	-	1	4,780	-	1	2,390	-	1	1,130	-	-	-	-
		Winter	1	20	-	-	-	-	1	370	-	-	-	-	-	-	-
			3	6,680	-	1	4,780	-	2	2,760	-	1	1,130	-	-	-	-

Dates of cruising: 1930, September 17
1931, October 7
1933, November 26

From Table 1 it is seen that during the five-year period between 1929 and 1933, 202 yellow pine and 7 sugar pine were killed, with a total loss of 190,980 board feet. Of the total 209 trees, 197 were killed by the western pine beetle (Dendroctonus brevicomis); and the remainder by the mountain pine beetle (D. monticolae).

The period over which the data have been secured is not sufficiently long to show any general trend. It does indicate, however, that the infestation is on a slight decline but that the losses each year are serious. While the number of trees killed has been variable, the total number of board feet has showed almost a steady decline. It is interesting to note that in all cases except 1932 the average volume of the trees destroyed by the summer brood is considerably greater than that destroyed by the winter brood.

Owing to the relatively few sugar pine trees that are present on the check plot, it seems unnecessary to discuss the losses of this species.

It would be highly desirable to have permanent plots of this type on all the major drainages or forest types for all the parks. By an annual cruise of the plot careful check can be kept on the insect populations within the parks' various watersheds. Data of this type, as they accumulate over a period of time, become of increasing importance, for by correlating them with temperature, rainfall, and other climatic factors we will be enabled to predict more closely the rise or fall of insect epidemics. Thus we can save considerable sums of money that would be spent on unnecessary control work, or on control work begun too late to do much good against a rising outbreak.

Permanent plots are, naturally, of immediate value by giving one the exact losses per unit area, year by year, and making it possible to say whether or not control work should be started against the insect in question.

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At Berkeley, Calif.

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